Installation Instructions and Service Manual

"Alien" Model 125 Actuator for Trailer Brakes

12,500 lbs Capacity
Part #49127 - Drum Brake Ready
Part #49125 - Disc Brake Ready
W/Solenoid Installed

IMPORTANT: READ AND UNDERSTAND THE ENTIRE INSTRUCTION/ASSEMBLY PROCEDURE BEFORE INSTALLING YOUR BRAKES AND ACTUATOR.

The Model 125 works by the "surge" or "push" of the trailer toward the tow vehicle. This automatically synchronizes the trailer brakes with the tow vehicle axle brakes. When the trailer pushes against the tow vehicle, the actuator telescopes together and applies the force to the master cylinder, supplying hydraulic pressure to the brakes. The built in sealed and independent dampening shock absorber controls the telescoping shock against the hitch.

Be sure to comply with regulations for brakes in your state. Brake laws sometimes are minimum standards and you may wish to add additional brakes to your trailer to meet minimum Gross Vehicle Weight Ratings (GVWR).

Read your tow vehicle owner's manual on towing capacity and other towing recommendations before installing brakes or this actuator.

The Model 125 Actuator is completely assembled and ready to bolt into place (Tongue sizes: 3"x4" & 3"x5", 9 ga. min.).

1. Bolt the actuator to the tongue-using grade 5 bolts 5/8 inch in diameter, 4 inches long. Attachment strength should equal or exceed 1-1/2 times trailer G.V.W.R.
2. Hydraulic brake lines should be installed on the trailer as described in the installation manual supplied with the brakes. Note: Some disc brakes require the use of flexible brake lines at the connection POINT on the brake caliper. Follow brake manufacturer instructions.
3. Use only DOT-3 brake fluid in the Model 125 actuator. Use a pressure type brake bleeder to bleed brakes. (This type of brake bleeder is available at your local automotive parts supply store.) Follow manufacturer's directions. Or, manually bleed the brakes using a heavy-duty flat blade screwdriver inserted in the hole provided on the top of the actuator near the front. Insert the screwdriver and use a pumping action to activate the master cylinder in order to bleed the brakes. See page 8 for more details.
4. To bleed master cylinder and brakes, install bleeder hose on first wheel cylinder to be bled; if tandem axle trailer, bleed farthest axle first, and the farthest brake on that axle first. Use a loose end of hose from the bleeder valve submerged in a clear container of brake fluid to observe bubbling (hose must be submerged into clean brake fluid to keep air from traveling back into the brake cylinder). Loosen the bleeder screw located in the wheel cylinder one turn; the system is now open to the atmosphere. The bleeding operation for that brake is complete when bubbling stops. Be sure to tighten bleeder screw securely. Each wheel cylinder must be bled until all air is out of the lines. Replenish the brake fluid during the bleeding process so the level does not fall below half full level in the master cylinder reservoir. When bleeding and testing is completed, make sure master cylinder is filled to approximately 3/8" below the top of the reservoir and filler cap is securely in place.
5. Check with your state motor vehicle department for laws concerning minimum trailer brake requirements. Some states may require brakes on all axles.
6. Road test trailer a short distance to activate the actuator several times. Check fluid level again. Remember, low brake fluid levels will result in reduced braking or no braking at all.
7. When testing is completed, make sure master cylinder is filled to approximately 3/8" below the top of the reservoir and filler cap is securely in place. Road test again to make sure brakes work properly.

Instruction #08099

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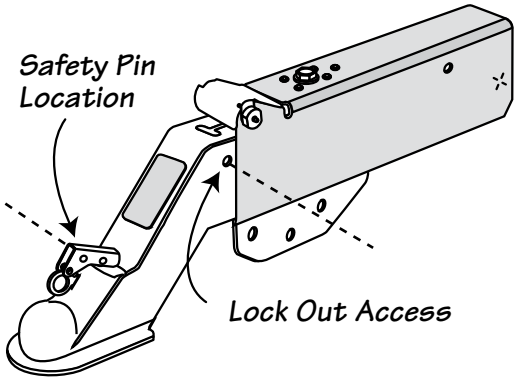
RATED CAPACITY: Maximum Actuator Capacity: 12,500 lbs. Gross Load; 1250 lbs. maximum tongue load; minimum tongue weight is 5% of GVWR.

The actual in-service rating is limited to that of the ball and hitch or the least rated component on the tow vehicle or trailer being used or the trailer manufacturer's G.V.W.R. shown on the certification label, whichever is lower (Note: GVWR is the Gross Vehicle Weight Rating which includes the trailer and the load weight as a Total Gross Weight).

HITCHING TRAILER

1. The vehicle, towing hitch and ball must have a rating equal to or greater than trailer GVWR.
2. Model 125 will accept 2-5/16" trailer hitch balls with a 12,500# capacity only. Trailer balls larger than 2-5/16" or out of round will not fit the coupler or may result in coupler failure. Balls smaller than 2-5/16" can cause shock loading and sudden disconnection. Make certain ball latch is in correct position to retain the hitch ball. Push latch lever back until safety latch engages plate below lever latch. Always insert safety pin into forward hole as a safety lock for the hitch ball coupler prior to towing. Do not tow trailer if coupler is damaged.
3. Connect safety cables or chains using crossed pattern under tongue, or follow trailer manufacturer's directions.
4. Connect actuator breakaway cable S-hook to the tow vehicle only. Do not connect breakaway cable S-hook to the safety cables or chains.
5. The breakaway system is designed to operate only after the trailer detaches from the tow vehicle and the safety cable/chains have disconnected from the tow vehicle. The breakaway is not a parking brake. Do not use as such.
6. **If the breakaway is accidentally applied while un-hitching, insert a flat bladed screwdriver into the slot of the emergency stop release bracket under the actuator and pry up to release. See page 8 for instructions.**
7. Any control devices that restrict operation of the actuator cannot be used. This includes certain sway control devices. The actuator must be free to telescope in response to braking requirements.
8. Equalizing or weight distributing hitches may be used, allow six to eight inches free chain length. DANGER: Tongue weight outside rating limits will interfere with performance of actuator, and braking system, and the tow vehicle.
9. Automatic "Free-Backing" (backing-up without braking action) is possible with this Actuator when supplied with an electrically operated "Reverse Lock-Out Solenoid" or coupled with "Free-Backing" drum brakes. To allow "Free-Backing" without either of those components installed the Operator must manually "Lock-Out" the Actuator movement while backing up. This is accomplished by placing a 7/16 X 5" long bolt (or comparable screwdriver) through the upper holes provided through the actuator housing (see right illustration).
   Danger: Failure to remove the bolt/screwdriver after backing will cause no braking action in normal use. Remember to always remove the bolt/screwdrive after backing the trailer.
10. **Important: The supplied, cable tethered, "Safety Pin" must be installed in the Coupler Latch hole (see right illustration) during towing at all times.**



MAINTENANCE

1. Always check the brake fluid reservoir before using trailer. Make sure it is at least half full. If not, re-fill to approx. 3/8 inch below the top of the reservoir with DOT 3 brake fluid. Check for leaks and repair as required. Never reuse brake fluid.
2. The model 125 is equipped with two "Super Lube" pins to provide grease to the inner rollers. Use a grease gun to lubricate the rollers through the grease fittings provided, every 6 months. For heavy use, grease every 3 months.
3. To extend coupler and ball life, coat both with a thin coating of grease. This will also eliminate squeaking. Wipe clean and renew grease film each time trailer is used.
4. Examine the actuator for bent parts or wear each time the trailer is used. Replace parts as necessary.
5. There are no user adjustments on the actuator.
6. Excessive actuator travel (shown by coupler roller path) may indicate a need to adjust the brakes or add fluid to the reservoir or a need to bleed the brakes and check connections for leaks. Adjust per instructions found in brake installation manual. In general, back off the adjusters on drum brakes from locked position, as required. Adjust Free-Backing brakes by rotating wheel in forward direction only. Failure to adjust may result in loss of braking. Disc brakes do not require adjustment, check for pad wear periodically.
7. While towing, if the actuator appears to be knocking against the hitch ball while starting or stopping, check brake fluid reservoir and fill if below 3/8" full from the top.

WARNING - DISC BRAKE USE

Actuator models designed for disc brakes do not have a "check valve" installed. Check valves are required for use with drum brakes. DO NOT use any actuator designed for drum brakes on a trailer with disc brakes installed.

WARNING

Actuator and brakes should always be flushed on the exterior with fresh water after using trailer in corrosive conditions. This includes salt water, fertilizers and other corrosive materials. Before storing trailer remove brakes and clean thoroughly. It is also wise to repack the bearings at the same time. Failure to properly and adequately maintain the actuator could cause serious damage, injury or death.

WARNING

The breakaway system is not designed to operate if the trailer does not separate completely from the tow vehicle, or if the tongue goes under the rear of the tow vehicle.

WARNING

In the event that the breakaway system is used, check all system components (cable, S-hooks, etc.) for proper working order. Replace any damaged parts with genuine Tie Down parts only.

WARNING

When re-setting the break away system keep hands and fingers clear as you re-set the mechanism, hydraulic pressure held in the system may cause the assembly to snap back suddenly.

WARNING

AVOID sharp turns, which can cause the actuator to bind or jackknife against the tow vehicle or cause a bend in the tongue. Either can damage the actuator causing brake failure. AVOID towing trailer across large bumps or dips that may over stress the connection between the trailer and tow vehicle, as this could result in damage to the actuator.

WARNING

DO NOT REUSE BRAKE FLUID. Always use fresh DOT 3 brake fluid from a fresh container. Failure to maintain proper levels of fluid in the reservoir will cause brake failure. Never use silicone based brake fluids.

WARNING

Failure to install the hitch pin before towing can result in accidental opening of the coupler hitch latch which can lead to the trailer coming off of the hitch ball causing serious damage, injury or death. If pin will not fit into the latch hole, the coupler is not attached properly. Re-set coupler on hitch ball.

WARNING

A minimum of 5% tongue weight and a maximum 10% tongue weight of the trailer GVWR must be positioned over the hitch ball. The Trailer tongue should be parallel to the ground. Too much weight can cause premature brake actuation and loss of control of the towing vehicle. Too little tongue weight can cause the trailer to fishtail, resulting in loss of control of the tow vehicle and trailer (total trailer weight GVWR includes weight of the trailer plus load).

WARNING

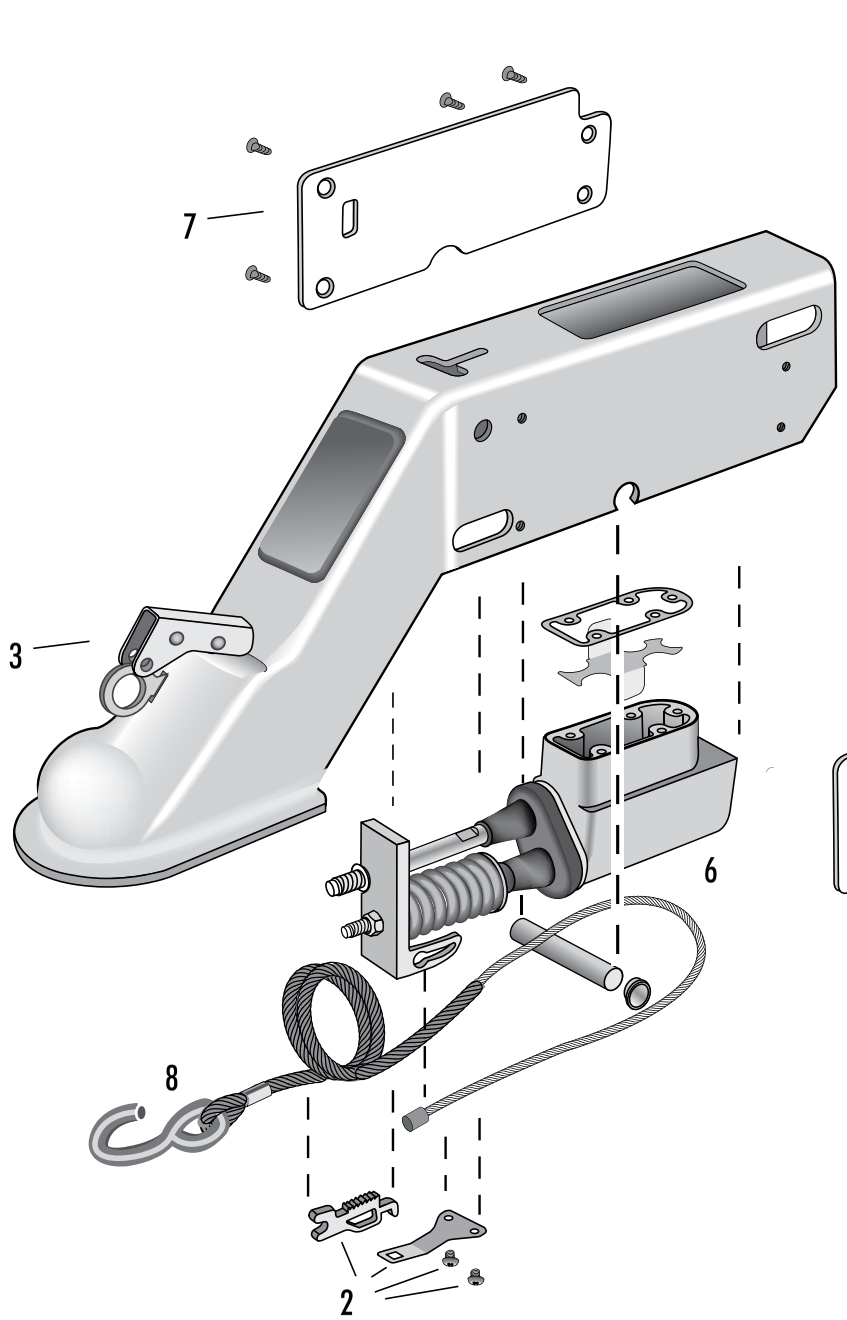
A loose fit between the coupler and hitch ball can cause the actuator and hitch ball to separate, causing serious damage, injury or death. Check coupler every time prior to towing and at each stop on long trips. Always make certain that coupler latch safety pin is securely installed into coupler latch.

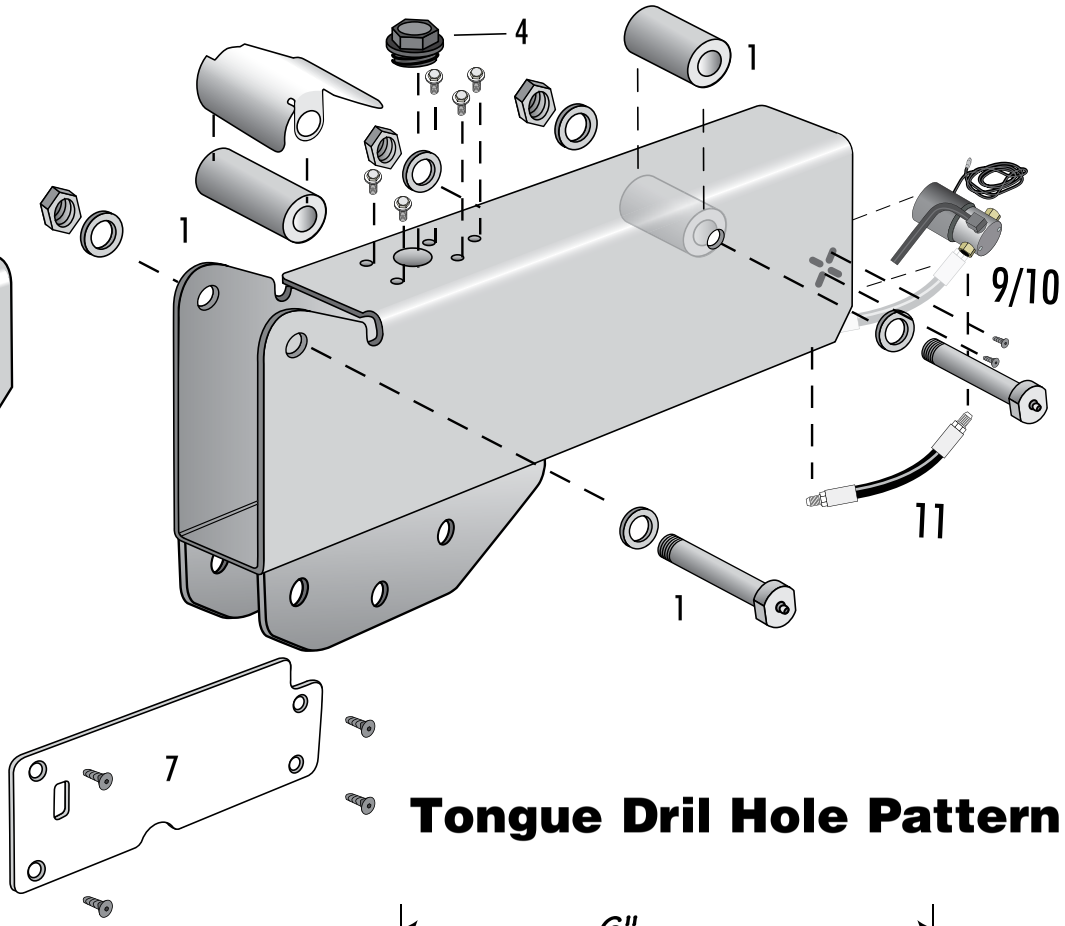
WARNING

Brake laws sometimes are minimum standards. Tie Down Engineering strongly recommends brakes on all axles. Read your tow vehicles owner's manual on towing capacity and other towing recommendations before installing brakes or this actuator.

WARNING

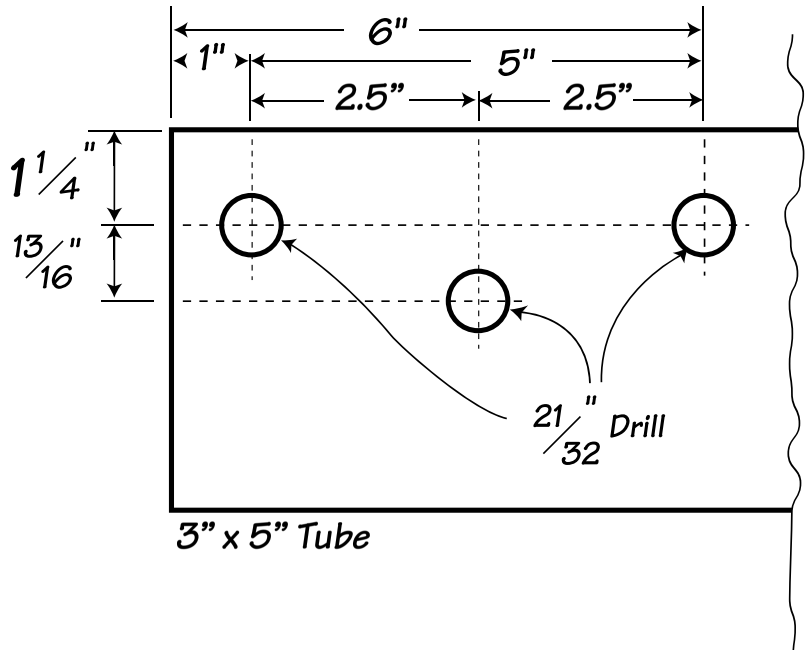
Never allow the coupler latch safety pin to remain in the reverse lockout position hole. After reverse maneuvering, always insert coupler latch safety pin back into coupler latch. **FAILURE TO REMOVE SAFETY PIN FROM REVERSE LOCK OUT POSITION HOLE WILL PREVENT FORWARD MOVEMENT BREAKING THAT CAN RESULT IN SERIOUS PROPERTY DAMAGE, INJURY OR DEATH.**



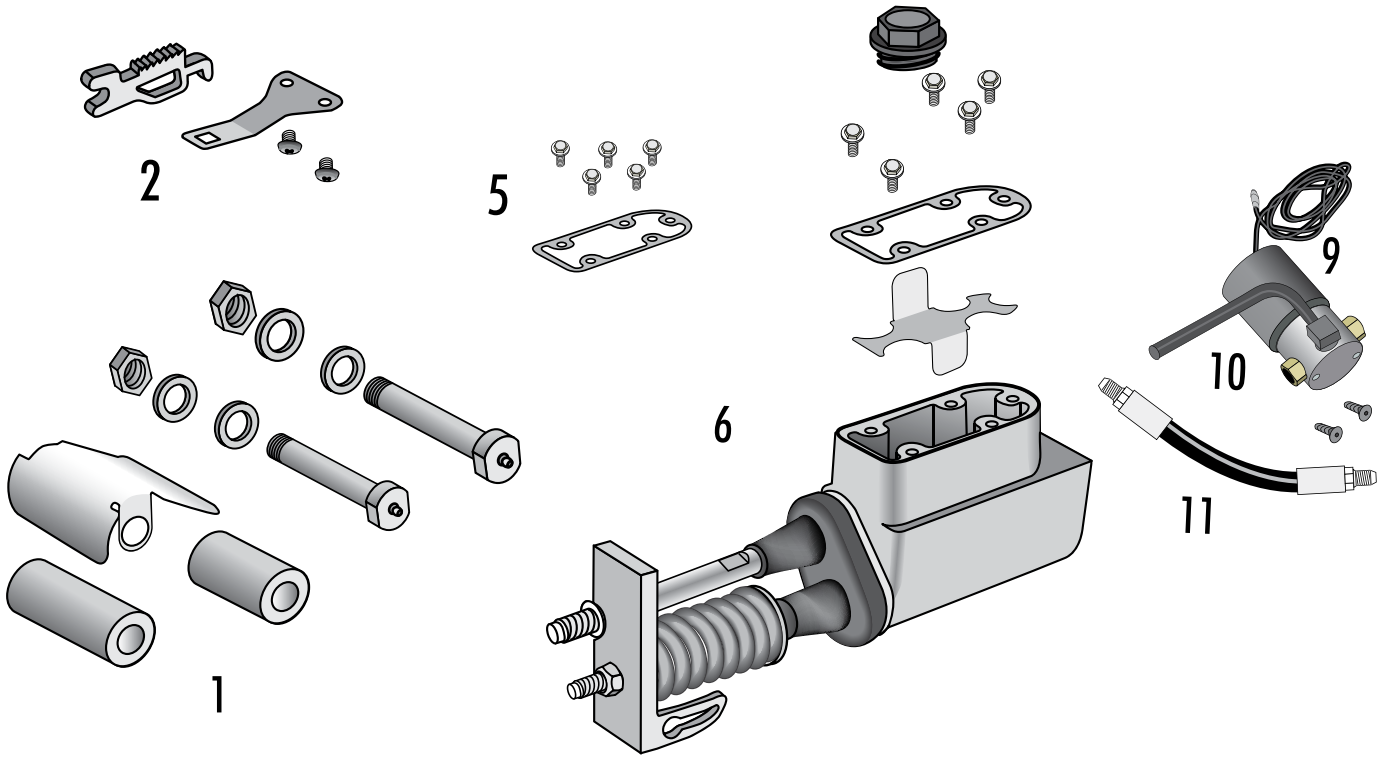


Model 125 Actuator Parts Detail

Tongue Dril Hole Pattern



Model 125 Actuator Parts Detail



Item	Part #	Description	Quantity
1	48836	Roller & Pin Kit	1
2	48839	E-Latch Kit (clip, spring and 2 screws)	1
3	48837	Coupler Latch Kit	1
4	48804	Master Cylinder Filler Cap with internal bladder	1
5	48835	Gasket & Screw Kit (master cylinder gasket and 5 mounting screws)	1
6	48854 48855	Master Cylinder Assembly “Drum Brake Ready” Master Cylinder Assembly “Disc Brake Ready” (check valve removed)	1
7	44838	Wear Plates Kit (2 wear plates and 8 mounting screws)	1
8	50308	E-Stop Cable	1
9	11253A	Solenoid	1
10	11262	Solenoid Return Tube	1
11	46238-6	Hi Pressure Brake Line Hose	1

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TIE DOWN ENGINEERING LIMITED ONE YEAR WARRANTY

Limited Warranty TIE DOWN ENGINEERING Inc ("TIE DOWN") warrants its products to be free from defects in material and workmanship for one year from date of delivery to the original purchaser when properly installed, used and maintained by the purchaser.

This warranty does not apply to damage or loss caused by any or all of the following circumstances or conditions:

- Damage caused during installation.
- Parts, accessories, materials or components used with or replacing any TIE DOWN braking system not obtained from or approved in writing by TIE DOWN.
- Misapplication, misuse and failure to follow the directions or observe cautions and warnings on installation, operation, application, inspection or maintenance specified in any TIE DOWN quotation, acknowledgement, sales literature, specification sheet or installation instruction and service manual ("applicable literature").
- Use of product in any other application other than those described in TIE DOWN's product information materials.

If any TIE DOWN products are found upon TIE DOWN's examination to have been defective when supplied, TIE DOWN will either: credit the purchaser's account for the purchase price of the TIE DOWN product; replace the TIE DOWN product; or repair the product. TIE DOWN has sole discretion in choosing which option to provide. For this LIMITED WARRANTY to apply, TIE DOWN must receive notice of the alleged defect within 30 days of either the discovery of the alleged defect or the expiration of the warranty period, whichever is earlier. Any claim not made within this period shall conclusively be deemed waived.

If requested by TIE DOWN, purchaser shall return the alleged defective product to TIE DOWN for examination at purchasers expense. TIE DOWN will not pay for expenses incurred in returning a product to TIE DOWN without TIE DOWN's prior written authority. TIE DOWN shall not be liable for any other expenses purchaser incurs to remedy any defect. Purchasers waive subjugations on all claims under any insurance.

Limitation of Liability: It is expressly agreed that the liability of TIE DOWN is limited and TIE DOWN does not function as an insurer. THE REMEDIES SET FORTH IN THIS WARRANTY SHALL CONSTITUTE THE EXCLUSIVE REMEDIES AVAILABLE TO THE PURCHASER OR USER AND ARE IN LIEU OF ALL OTHER REMEDIES, EXPRESS OR IMPLIED. THE LIABILITY OF TIE DOWN, WHETHER IN CONTRACT, IN TORT, UNDER ANY WARRANTY OR OTHERWISE, SHALL NOT EXCEED THE PURCHASE PRICE OF THE PARTICULAR PRODUCT MANUFACTURED, SOLD OR SUPPLIED BY TIE DOWN.

To Obtain Technical Assistance: To enable TIE DOWN to respond to a request for assistance or evaluation of customer or user operating difficulty, please provide at a minimum the following information by calling 404-344-0000:

- Model number, serial number and all other data on the specific component which appears to be involved in the difficulty.
- The date and from whom you purchased your TIE DOWN product.
- State your difficulty, being sure to mention at least the following: Application, Nature of load involved, and Weight of the load.

Field Service: If field service at the request of the purchaser is rendered and the difficulty is found not to be with TIE DOWN's product, the purchaser shall pay the time and expense (at the prevailing rate at the time of service) of seller's field representative (s). Charges for service, labor and other expenses that have been incurred by the purchaser, its customer or agent without prior written authorization of TIE DOWN will not be accepted.

TIE DOWN EXTENDS NO WARRANTY, EXPRESS OR IMPLIED, ON PRODUCTS NOT MANUFACTURED BY TIE DOWN OR TO TIE DOWN'S DESIGN SPECIFICATION, INCLUDING BUT NOT LIMITED TO SUCH ITEMS AS TIRES, BRAKES, BEARINGS, HOSE AND TUBING. PURCHASER'S RECOURSE SHALL BE LIMITED TO ANY WARRANTY OF THE RESPECTIVE MANUFACTURERS.

THIS WARRANTY EXCLUDES ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY PURPOSE.

THIS WARRANTY DOES NOT COVER NOR EXTEND TO INCIDENTAL OR CONSEQUENTIAL DAMAGE. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

No representative has authority to make any representation, promise or agreement except as stated in this Limited Warranty. TIE DOWN reserves the right to make design and other changes upon its products without any obligation to install the same on any previously sold or delivered products.

DUE TO THE WIDE VARIATION IN USES TO WHICH TIE DOWN PRODUCTS (WHEELS, HUBS, BRAKES, ETC.) ARE SUBJECTED BY USERS, WE ARE UNABLE TO SPECIFY CARRYING CAPACITIES OR SPEEDS FOR A PARTICULAR APPLICATION. THEREFORE, THE MANUFACTURER MUST TEST HIS EQUIPMENT UNDER THE MOST SEVERE CONDITIONS TO DETERMINE THAT TIE DOWN PRODUCTS ARE SUITABLE.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THOSE DESCRIBED ABOVE. EFFECTIVE JANUARY 2005 THIS WARRANTY SUPERSEDES ALL PRIOR WARRANTIES, WRITTEN OR IMPLIED.

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Bleeding Instructions for "Alien" Brake Actuator

Tools needed:
One Large flat blade screwdriver
Two Medium flat blade screwdrivers
DOT 3 brake fluid

The new 125 actuator from Tie Down Engineering uses a different method of bleeding the master cylinder and brakes from other models in the TDE line up. All TDE actuators use a built in dampener system. All models except the 125 use brake fluid from the master cylinder to prime the dampener. The 125 dampener is a sealed unit that is shipped pre-primed. There is no need to fill the dampener before bleeding the brakes and the dampener should not be tampered with.

1. Fill master cylinder with DOT 3 brake fluid. Never use any silicone based brake fluids.

2. Lock open the E-stop release on the underside of the actuator using a flat blade screwdriver. Wedge the screwdriver under the rear edge of the E-stop release (Photo 1). This will keep the locking mechanism out of the way while you are bleeding the brakes (Photo 4).

3. The master cylinder is pumped by inserting the large flat blade screwdriver through the opening on the right side of the actuator where the E-stop cable exits the housing. To make the large flat blade screw driver get a better leverage point, first insert medium flat blade screwdriver in the top of the actuator and pry back the narrow plate (Photo 2). Insert the large flat blade screwdriver into the opening on the side in front of the plate (Photo 3). Remove the smaller screwdriver in the top hole. This will give you more leverage to pump the cylinder from the side position.

4. Pump the cylinder two or three times only (Photo 4). Release fully and repeat as needed until the brakes are bled and the pumping action feels tight. This allows any air bubbles to escape to the top of the master cylinder.

5. Check the fluid level of the master cylinder often during the bleeding process. Do not allow it to go dry.

6. Remove the screwdriver from the E-stop catch. Make sure the catch is released fully by being flat against the bottom of the actuator (Photo 5).

For the latest information and updates go to:
http://tiedown.com/amarinedls.html

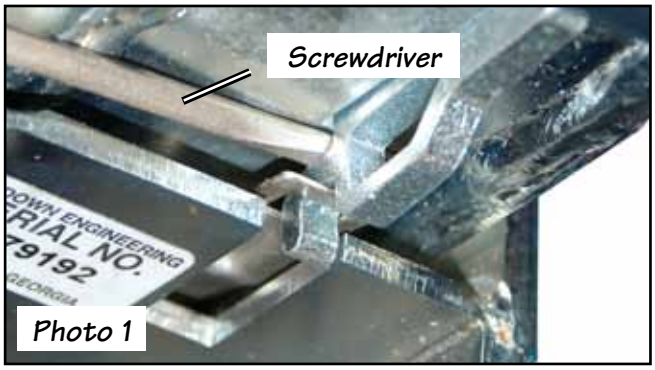


Photo 1

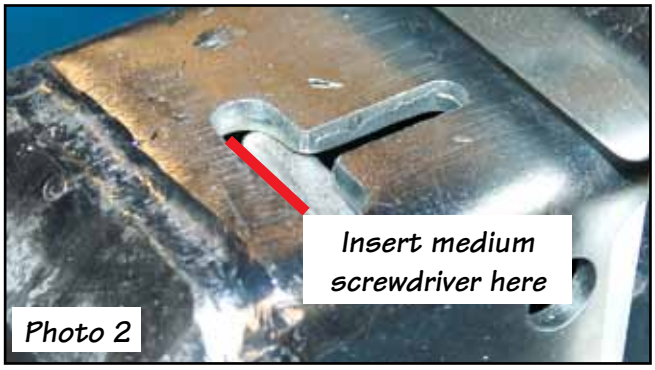


Photo 2

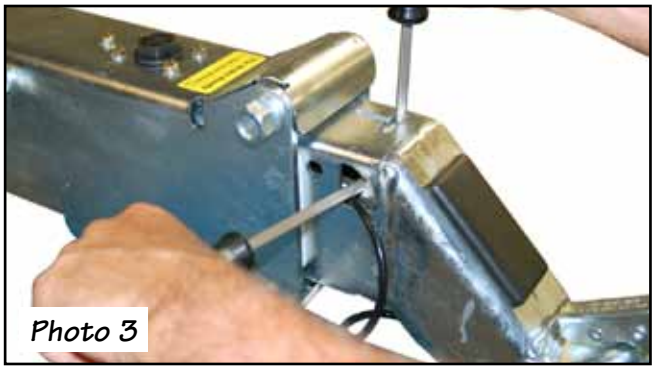


Photo 3

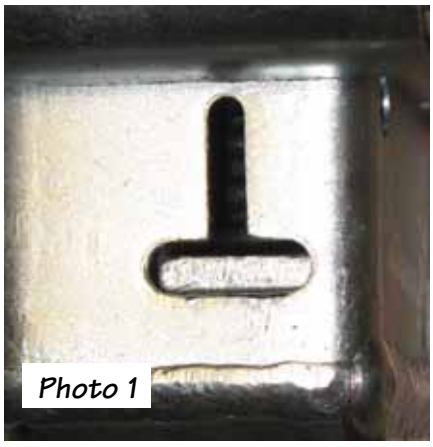
Photo 4

Photo 5

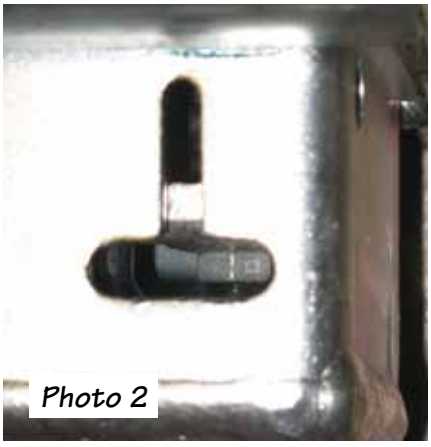
Releasing The Emergency Stop

WARNING:

If the emergency stop bracket is towards the rear (shown in #2) , this indicates that the emergency stop bracket is "set" and must be released before using the trailer.



Emergency Brake Disengaged
- Normal Use -



Emergency Brake Engaged
- DO NOT TOW -

To Release the Emergency Brake:
Pry up the emergency stop release bracket (located on the underside of the actuator) with a screwdriver (Photo 3) until the E-stop bracket snaps back into the disengaged position (Photo 1).

Note: if you any reason you believe your brakes are engaged, the release procedure can be preformed at any time. Always make sure the release bracket is towards the tow vehicle (Photo 1).

Emergency Stop Release Bracket
- Pry up to release Emergency Stop -

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